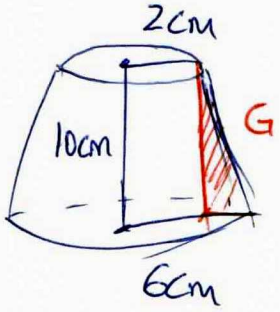
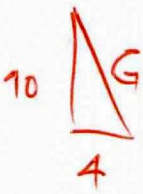
(12.) CALCULATE THE LATERAL AREA, SURFACE AREA AND VOLUME OF A TRUNCATED CONE WITH RADII OF 2 AND 6 CM AND A HEIGHT OF 10 CM



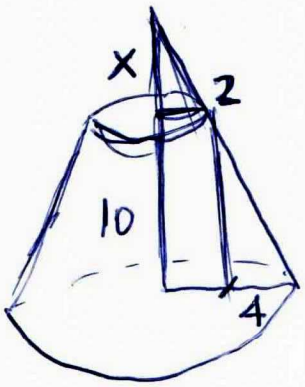
$A_L = \pi \cdot (r+R) \cdot G = 3'14 \cdot (2+6) \cdot 10'8 = 270'7 cm^2$



$G^2 = 4^2 + 10^2 = 116 \; ; \; G = \sqrt{116} \simeq 10'8 \, cm$

$A_T = A_L + A_{B_1} + A_{B_2} =$

$= 270'7 + \pi \cdot 6^2 + \pi \cdot 2^2 = 396'4 cm^2$



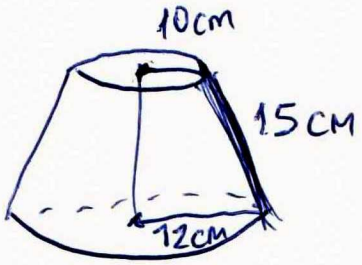
$V_C = V_{C_1} - V_{C_2} = \frac{1}{3} A_{B_1} \cdot h_1 - \frac{1}{3} A_{B_2} \cdot h_2 = [1]$

$\begin{matrix} x & 10 \\ 2 & 4 \end{matrix} \quad x = \frac{20}{4} = 5 \; ; \; h_2 = 5 \; ; \; h_1 = 10+5 = 15$

$[1] = \frac{1}{3} \cdot \pi \cdot 6^2 \cdot 15 - \frac{1}{3} \cdot \pi \cdot 2^2 \cdot 5 =$

$= 544'5 \, cm^3$

(13) CALCULATE THE LATERAL AREA, SURFACE AREA AND VOLUME OF A TRUNCATED CONE WITH RADII OF 12 AND 10 cm AND A SLANT HEIGHT OF 15 CM.

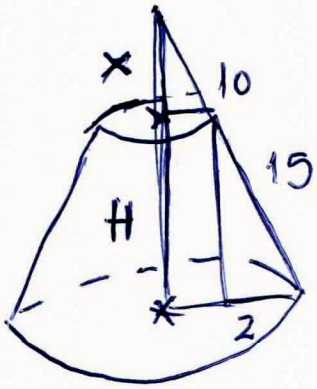


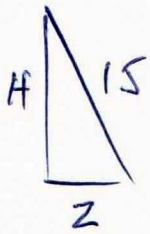
$A_L = \pi \cdot (r+R) \cdot G = 3'14 \cdot (10+12) \cdot 15 =$

$= 1036'7\ cm^2$

$A_T = A_{B_1} + A_{B_2} + A_L = \pi \cdot 12^2 + \pi \cdot 10^2 + 1036'7 =$

$= 1803'2\ cm^2$

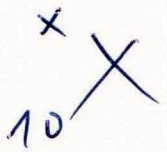




$15^2 = 2^2 + H^2$;

$225 = 4 + H^2$; $221 = H^2$;

$H = \sqrt{221} \simeq 14'9\ cm$



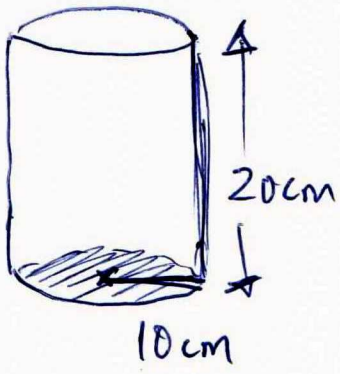
$x = \frac{14'9}{2} \simeq 7'45\ cm$

$h_2 = 7'45$; $h_1 = 7'45 + 14'9 = 22'35\ cm$

$V = V_{C_1} - V_{C_2} = \frac{1}{3} \cdot 12^2 \cdot 22'35 - \frac{1}{3} \cdot 10^2 \cdot 7'45 \simeq$

$\simeq 1805\ cm^3$.

(15) CALCULATE THE QUANTITY OF SHEET METAL THAT WOULD BE NEEDED TO MAKE 10 CYLINDRICAL CANISTERS WITH A DIAMETER OF 10 CM AND A HEIGHT OF 20 CM.



$A_T = A_B + A_L$

$A_B = \pi \cdot 10^2 = 100\pi \tilde{=} 314\,cm^2$

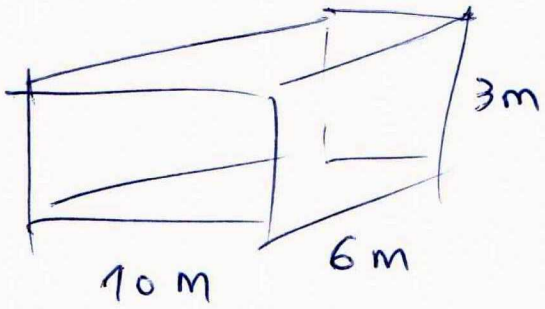
$A_L = 2\pi R \cdot H = 2 \cdot 3'14 \cdot 10 \cdot 20 =$

$= 1256'6\,cm^2$

Total: $10 \times 1256'6 = 12566\,cm^2 =$

$= 1'2566\,m^2$

(16) HOW MANY SQUARE TILES (20 cm x 20 cm) ARE NEEDED TO COAT THE SIDES AND BASE OF A POOL WHICH IS 10 m LONG, 6 M WIDE AND 3 M DEEP.



$A_T = 10 \cdot 6 + 2 \cdot 10 \cdot 3 + 2 \cdot 6 \cdot 3 =$

$= 60 + 60 + 36 = 156\,m^2 =$

$= 1560000\,cm^2$; $A_{tile} = 20 \times 20 =$

$400\,cm^2$

$1560000 : 400 = 3900$ tiles.

(17) FOR A PARTY, LOUIS HAS MADE ABOUT 10 CONICAL HATS OUT OF CARDBOARD. HOW MUCH CARDBOARD WAS USED IN TOTAL IF EACH CAP HAS A RADIUS OF 15 CM AND A SLANT HEIGHT OF 25 CM?

$A_L = \pi \cdot R \cdot G = 3'14 \cdot 15 \cdot 25 =$

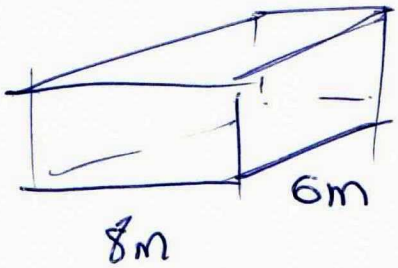
$= 1178\ cm^2$

$10 \cdot 1178\ cm^2 = 11780\ cm^2 = 1'178\ m^2$

(18) A SWIMMING POOL IS 8M LONG, 6 M WIDE AND 1.5 M DEEP. THE WATER RESISTANT PAINT NEEDED FOR THE POOL COSTS $6 PER SQUARE METER.

a) HOW MUCH WILL IT COST TO PAINT THE INTERIOR SURFACES OF THE POOL?

b) HOW MANY LITERS OF WATER WILL BE NEEDED TO FILL IT?



a) $A = 8 \cdot 6 + 2 \cdot 8 \cdot 1'5 + 2 \cdot 6 \cdot 1'5 =$

$= 48 + 24 + 18 = 90\ m^2$

$6 \cdot 90 = \$540$

b) $V = 8 \cdot 6 \cdot 1'5 = 72\ m^3$